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The Latent Period of Peanut Witches' Broom Agent in the Vector *Orosius orientalis*[1] (Research Note)

I. L. Yang and S. Y. Wu[2]

Abstract The minimum periods of the acquisition and inoculation feedling for the insect transmission of peanut witches' broom disease are six hours and one hour, respectively. The minimum incubation period of the disease agent in the vector *Orosius orientalis* is 11 days.

Key words : Peanut witches' broom, vector, *Orosius orientalis* Matsumura, latent period.

In 1956, Bergman (1) first reported the peanut witches' broom (PnWB) disease in Java. Since then, the little leaf or witches' broom on leguminous plants were reported in Australia (2), Ryukyu (4) and Taiwan (3). These diseases were confirmed to be transmitted by *Orosius orientalis* (Evans) and *O. orientalis* Matsumura. Because of the prevalence of the PnWB disease in Taiwan, studies on the latent period of PnWB agent in the insect vector *Orosius orientalis* Matsumura were made.

The leafhopper vector *O. orientalis* collected from peanut fields at Penghu and Miaoli areas were propagated on healthy food plants of peanut in insectaries, where the temperature was maintained at 24—28°C. The nymphs of second and third stages of *O. orientalis* were used as insect vectors for testing the aquisition, incubation and inoculation periods. The acquisition feeding period on transmission was tested by varying the feedling time of the insects on the diseased plants. The acquisition feeding period tested for PnWB were 2, 3, 6, 8, 24 and 48 hours. Forinoculation feeding period, the insects were grouply exposed to the diseased plants for 24 days, then the exposed insects were transferred to test plants for 1/3, 1/2, 1, 3, 6, 8 and 24 hours for inoculation feedling. For incubation period of PnWB agent in the vector, the leafhoppers were fed on the PnWB-diseased plants for 7 days for acquisition feeding, then the exposed insects were each transferred to test plants for 2, 3, 4, 5, 6, 8, 10, 12 and 14 days for inoculation feeding. Two week-old peanut seedling were used as test plants, and the inoculated plants were grown in a greenhouse for three months for symptom observations.

For acquisition feeding period of *O. orientalis* in relation to infection of PnWB, longer acquisition feeding tended to cause higher infection of the disease. The minimum acquisition feeding period was determined to be 6 hours. None of the insect which had

1. Contribution No. 1525 from Taiwan Agricultural Research Institute.

2. Associate Plant Pathologist and Project Employee, Department of Plant Pathology. TARI, Wufeng, Taichung, Taiwan, R. O. C.

Table 1. Acquisition feeding period of *Orosius orientalis* in relation to infection of peanut witches' broom disease

Acquisition feeding period (hr)	Incubation feeding period (day)	Inoculation feeding period (day)	Total transmission[a]	
			No.	%
2 (70 — 80)[b]	14 — 28	4	0 / 16	0
3 (70 — 80)	14 — 28	4	0 / 16	0
6 (70 — 80)	14 — 28	4	1 / 16	6.25
8 (70 — 80)	14 — 28	4	1 / 16	6.25
24 (70 — 80)	14 — 28	4	5 / 16	31.25
48 (70 — 80)	14 — 28	4	7 / 16	43.25

a. Numerator/denominator=Infected plants/inoculated plants.

b. Numbers in the parenthesis indicate number of insects tested in colony.

Table 2. Inoculation feeding period of *Orosius orientalis* in relation to infection of peanut witches' broom disease

Acquisition feeding period (day)	Inoculation feeding period (hr)	Total transmission[a]	
		No.	%
21 (50 — 60)[b]	1 / 3	0 / 18	0
21 (50 — 60)	1 / 2	0 / 18	0
21 (50 — 60)	1	1 / 18	5.56
21 (50 — 60)	3	3 / 21	14.29
21 (50 — 60)	6	3 / 21	14.29
21 (50 — 60)	8	4 / 21	19.05
21 (50 — 60)	24	6 / 18	33.33

a. Numerator/denominator=Infected plants/inoculated plants.

b. Numbers in the parenthesis indicate number of insects tested in colony.

Table 3. Transmission of peanut withches' broom disease by insect vector *Orosius orientalis* at different incubation periods

Acquisition feeding period (day)	Inoculation feeding period (day)	Total transmission[a]	
		No.	%
7 (47)[b]	2 (33)	0 / 8	0
7 (41)	3 (32)	0 / 8	0
7 (53)	4 (42)	2 / 10	20
7 (42)	5 (34)	1 / 8	12.5
7 (56)	6 (45)	2 / 8	25
7 (51)	8 (38)	2 / 10	20
7 (46)	10 (32)	3 / 8	37.5
7 (42)	12 (34)	3 / 8	37.5
7 (52)	14 (38)	4 / 8	50

a. Numerator/denominator=Infected plants/inoculated plants.

b. Numbers in the parenthesis indicate number of insects tested in colony.

been exposed for 3 hours could transmit the disease (Table 1). For inoculation feeding period, longer inoculation feeding tended to cause higher infection of the disease. As shown in Table 2, 1/2 hour inoculation feeding was not enough to induce disease infection, and the minimum inoculation feeding period was one hour. For incubation period, the minimum incubation period of PnWB agent in the leafthopper vector was 11 days (Table 3).

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落花生簇葉病病原在媒介昆蟲南斑葉蟬之潛伏期[1]

楊一郎　吳淑雅[2]

落花生簇葉病病原之經由南斑葉蟬（*Orosius orientalis* Matsumura）媒介傳染必需之最短獲毒吸食時間爲6小時，最短接種吸食時間爲1小時，媒介蟲體內之最短潛伏時間爲11天。

關鍵詞：落花生簇葉病、媒介昆蟲、南斑葉蟬、潛伏期。

1.臺灣省農業試驗所　研究報告第1525號。

2.本所植病系副研究員，約僱技術員。臺灣省　臺中縣　霧峰鄉。